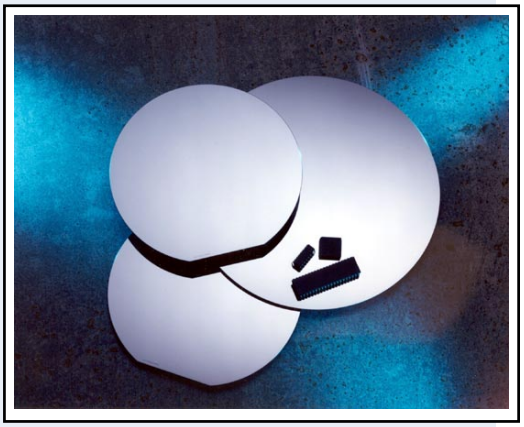
USIC
United States Industry Coalition, Inc.

IPP
Initiatives for Proliferation Prevention
National Nuclear Security Administration

Isotopically Pure Silicon for Improved Microelectronics



- Power dissipation/thermal management are major issues in microelectronics industry
- Current computer chip technology relies on naturally-occurring silicon, a mix of 3 silicon isotopes (28Si, 29Si, 30Si)
- Silicon-28 (majority isotope) in pure form offers higher thermal conductivity over naturally-occurring silicon, enabling lower temperatures at transistor junctions which will allow:
  - Higher performance (higher switching speeds)
  - Lower power dissipation (lower leakage currents)
  - Higher reliability (fewer hot spots & smaller temperature gradients)
  - Lower costs (higher yields of peak performing chips, less expensive cooling solutions, smaller packaging)
- Microprocessor manufacturers need source of isotopically pure silicon
- Project goal: build capacity for economical manufacturing of pure 28Si, 29Si, 30Si
  - Samples of test wafers available to major manufacturers
  - Testing/analysis underway on first shipment of silicon isotopes from Russia

Commercialization Started

Isonics corporation

Isonics Corporation
Golden,CO

Krasnoyarsk-45
Zelenogorsk, Russia

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